

# No-take zones



In West Papua province's Raja Ampat islands, a local fisheries conservation initiative is setting a global standard

**Bobby Anderson**



Freeing shovel-nosed ray *Andy Miners*

Local adat (traditional law) chiefs recall a time when the sea around Batbitim Island in southeastern Raja Ampat was once an Eden, before boats from outside began to strip the stocks bare. Raja Ampat hosts more varieties of hard and soft coral than any other area on earth. The colours of the reefs resemble old corner shops selling confectioners penny candy of every colour and gloss. The diversity of reef and pelagic fishes on these reefs is unrivalled: shoals and schools intermingle and occasionally explode in panic at the arrival of a pack of hunting devil rays or a grey reef shark.

Even through the 1980s and 1990s, sharks were common in the waters of southeast Misool: local fishers had no use for them, preferring more marketable catches. But by the mid-2000s, that had changed. Rising incomes in China had led to dramatic increases in the demand for shark fin, which—although absent of taste and nutritional value—are a status symbol at the banquets of the nouveau riche. Soon longliners from across the archipelago, as well as from China and Taiwan, descended upon Raja Ampat, trailing to 2000 hooks per line.

The onslaught also involved locals. The northern beach of Raja Ampat's Batbitim Island became host to a seasonal shark-finning camp, leaving the sand scattered with desiccated cartilage from the sharks and rays caught to feed a voracious worldwide market in fins. The bodies, which have little commercial value, were left on beaches or sunk in the open water, often when the sharks were still alive.

The devastation that this demand has wreaked across Raja Ampat cannot be estimated, as no baseline data exists. But one thing is certain: where they had once been abundant, there were no more sharks. Only a few years later, however, the sharks have returned. A remarkable collaboration between the local community and a committed group of foreign divers has established a no-take zone to recover what had been lost.

## Pushing for change

The no-take zone was the brainchild of Andy Miners, a dive guide from Cornwall, committed conservationist and amateur marine biologist. Having been confronted by the carnage on Batbitim Island's north beach, Miners went on a mission to establish a resort and dive centre to support a no-take zone that would allow for the re-stocking of depleted fish populations in southern Raja Ampat. Having convinced Marit Maritson, Thorben Nieman and Mark Pearce of his idea, the four raised capital from friends in the wider diving community.

The centre's approach to sustainability relates to human resources, the institutionalisation of conservation practices and finances. Misool Eco Resort earns income from divers and its foundation, Baseftin, and manages conservation activities in the no-take zone and the ranger patrols protect it. All are about 70 per cent locally staffed. In the time between identifying young trainees and turning them into experienced dive guides, the operation is filling the gap with experienced guides from Manado.

The institutionalisation of conservation practice is a more complicated issue. Across Indonesia, conservation is something others profit from. Exploitation of resources pays a pittance, but conservation hardly pays at all, with much of the profits from conservation concentrated in the hands of local tour operators. In Misool, the centre's human resources provides locals with a stake in maintaining these activities and the increased catch on the fringes of the zone has amply demonstrated a tangible value for others in the community.

Local buy-in was vital to make the concept work. Miners negotiated with southeastern Misool's adat leaders for months before the no-take zone was finally agreed upon. The leaders were keenly interested in the idea. They were not profiting from the trade in sharks: they were intimidated by the longliners but felt powerless to stop them. They, in turn, convinced

their communities of the benefits of the plan.

Buy-in from locals was vital for the success of the no-take zone for cultural reasons, but also to meet legal requirements. Indonesian law recognises the exclusive ownership of marine zones by traditional 'owners': in this case, the local villages. Agreement by the adat leadership of the nearest inhabited islands and their constituencies was thus key to the establishment of the no-take zone and its boundaries. Once adat leaders and their communities aligned, the district and provincial fisheries departments approved the agreement.

## Patrolling the zone

The establishment of the no-take zone led to the expulsion of shark-finning camps and the regulation of boats in the area: boats were allowed to transit the no-take zone, but under no circumstances could they fish there. Local rangers patrol in donated boats with the blessing of the local security actors, who often actively assist them. When fishing boats are seized, they are impounded and the catches are jettisoned into the water. The boats are held until a fine is paid.

The patrol have chased off numerous large long liners; the most dramatic capture so far has been two fishing boats from Sulawesi, their roofs covered with drying fins. The boats were caught just after the nets were submerged, and when the patrol boarded the boats and dragged the nets from the water, entangled sharks were cut free and saved. More common are the seizures of local boats from Sorong: dozens a month have been driven off, and as word of the vigilance of the patrols spread, the number of seizures has declined to an average of two per month.

The most difficult seizures are the boats from villages that traditionally fished the zone before the adat leaders decided otherwise. Such challenges to adat authority from impetuous young men seeking to establish their own power are common. But the law is applied to all. In the beginning, the patrols took a 'soft' approach to local infringements. Warnings were accompanied by constant socialisation of the reasons behind the no-take zone – food security for future generations. Fines were not imposed, but catches were confiscated. Meetings were then held in the offenders' villages, when the elders would discuss the positive impact of the zone. In the last five years, violations have fallen by 90 per cent.

The patrols are now paid by the profits from the resort and from donations: three dedicated boats and a team of local rangers, most of them ex-shark fishermen, operate from three ranger bases. They coordinate patrols with the resort and with local villages that report boats in the area. In 2010 the zone was expanded eastward to include Daram Island, doubling the size of the zone, and it is now larger than the land and sea area of Singapore.

## Rejuvenation

Just as the impact of longlining in Raja Ampat cannot be quantified, neither can the impact of the no-take zone. But it is clear to all. Simply diving the house reef off the Misool pier reveals every common reef species: snappers, a school of juvenile jacks, giant Malabar groupers, napoleon wrasses, bumphead parrotfish and the occasional great barracuda. Every dive site reveals these, as well as grey reef, whitetip, blacktip and wobbegong sharks, schools of barracudas and all manner of pelagics. Rare nocturnal epaulette sharks are no longer rare here. The channel that separates Batbitim from a neighbouring island was once renowned by locals for shovel-nosed rays, but they were systematically netted and fished. However, the population is growing. There are other rarities: blotched fantail rays, Sargassum frogfish, hammerhead, silvertip, and whale sharks.



Misool eco-resort *Bobby Anderson*

The protected cove on the north beach now hosts juvenile blacktip sharks learning to hunt, the cove is now a parturition area where mothers give birth. The northwest corner of the cove hosts a colony of mandarin fish, as well as endemic species such as flasher wrasse and a species of pygmy seahorse found nowhere else on earth. The famed marine zoologist Dr Gerald Allen has discovered numerous new species in the area, including a new stingray with a four-metre disk width. Until recently, only reef mantas were known to exist. However, in the last four years, scientists have determined that

two species exist: Reef (*alfredi*) and Oceanic (*birostris*). A third species has possibly been identified. Reef mantas with wingspans up to five meters are found throughout Misool, but the real stars are the oceanic mantas, with wingspans up to nine metres.

One of Misool Basefin's conservation programs, the Misool Manta Project, studies the endemic and transitory ray populations of southern Raja Ampat, taking DNA samples, tagging mantas with radio tracking devices and photographing them. Radio receivers are moored at depths of 40 to 50 metres at strategic points inside and outside of the zone and are regularly collected, stripped of data, and re-anchored. This provides a fascinating map of these creatures as they move from station to station. So rich are the nutrients in the water that these receivers are completely encrusted by sponges, molluscs, tunicates, and marine algae within a few months. Only 30 per cent of the individual mantas have been seen more than once, and the resighting rate of the larger oceanics is just six per cent.

## Infractions in the zone

The most effectively patrolled areas of the no-take zone are those that benefit from line-of-sight radio communication between the ranger stations and the ranger patrol boats. Locals constantly report suspect vessels and assist the patrols to protect their assets. The local fishermen benefit from the zone by fishing just beyond its borders, reaping the benefit from the expanded stocks that spill over into the surrounding fishing grounds. However, the fringes of the zone are still preyed upon. In Daram, on the far west of the islands, there is evidence of dynamite fishing. Devastated sections of hard coral on top of seamounts and blown out from walls to scatter on the sea floors below: gorgonian fans and soft corals ripped loose to drift along as they slowly die; an emperor angelfish with its eyes blown loose: wounded red snappers finning ineffectively in the shadows until the barracuda find and disassemble them.

This practice is still found across the archipelago. One boat from Daram threatened an unarmed Misool patrol boat with a bomb. That ship escaped. These villagers also prey on turtles. On Daram's beaches we saw the drag marks of green turtles on sand as they climbed toward the tree-line to lay and bury their eggs, followed by the footprints of the men who followed those same trails and dug them up. Green, Hawksbill, and Leatherback turtles are all endangered, the Leatherbacks critically. When locals catch them, they are killed and eaten. North and south of the zone, only juvenile hammerheads are found, though fewer as the years go by.

This mass killing continues elsewhere: North Sulawesi's Lembeh strait was once known for sharks and rays, but they were wiped out by a few longliners who stripped the strait of megafauna over a six-month period in the 1990s. It is now only known for small creatures on the black sand. A few years ago north of the Wakatobi Islands in Southeast Sulawesi, a hammerhead parturition site was found and annihilated in months. And in Bali's Nusa Penida, pregnant threshers are being exterminated in a parturition area near Sampalan Beach. The pups, which have no commercial value, are left on the beaches to be eaten by stray dogs. In Ende, in Flores, slaughtering rays is the only growth industry. The Misool no-take zone is all the more incredible; that clichéd Eden that the adat chiefs remembered is returning.

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